"You can get there from here": Campus Transportation Practices: What They Are, And What They Could Be

(Essay by Ashley Bowman)

Introduction

Anthropogenic global warming poses an existential threat to the human future. Inarguably one of the greatest contributors to this very real, apocalyptic-sized problem, is the popularity of personal vehicles, and their dependency on the planet-warming carbon fuels that make them go. The EPA estimates that 28% of all greenhouse gas emissions in the United States come from transportation ("Sources of Greenhouse Gas Emissions"). And a livable climate is not the only thing at risk. Transportation-based air pollution is deadly to humans. In a 2011 study published in *Environmental Health Perspectives* (EHP) about the financial and health benefits of bicycle use, researchers estimate that "63,000-88,000 premature deaths" occur annually in the United states as a result of the harmful particulate matter emitted from "fossil fuel-based transportation"(Grabow et al. 69). Another study, from MIT, puts this death toll as high as 200,000 a year (Boras 2013). Our health and that of our planet is in danger, and Universities can pioneer ways to protect us. There are a number of useful, planet–saving measures that we can take right here at the University of Southern Mississippi Gulf Coast (USMGC) campus regarding transportation practices, ranging from easy and inexpensive, to large-scale paradigm shifts that might cost a little bit now, but save exponentially more in the end.

The Problem at Large

On many campuses, if not most, a single passenger driving a personal vehicle is the most commonly chosen mode of transportation ("Campus Bicycle Plan" UAB, 21). On some campuses like our own, there are virtually no alternatives. Since its invention in the late 1800s (Godwill), the personal gas-powered vehicle has transformed from a crazy idea, to an integral part of our society. Except for a few densely populated urban areas with multiple public transit options and compact urban

centers, the personal car is a necessity for most people. In order to work, go to school or even shop we have to travel, and when there are few public transportation options (or none), the personal automobile vehicle may be the only feasible choice. Some of the pollutants emitted from carbon-powered vehicles are soot and metal particulates, hydrocarbons, nitrogen oxides, carbon monoxide, sulfur dioxide, hazardous toxics and greenhouse gases (a concoction of gases consisting mostly of carbon dioxide). These are either hazardous to human health directly, typically to respiratory function, or contribute to global warming and climate disruption ("Cars, Trucks, and Air Pollution"). Emissions from conventional diesel and gasoline vehicles are especially deadly: especially those like Benzene, acetaldehyde, and 1,3-butadiene" which "account for *half* of all cancers caused by air pollution" (Italics original, "Cars, Trucks, and Air Pollution"). Clearly, the costs of transportation-as-normal are high, much higher than is usually credited in discussions about the "high costs" of green energy and transportation strategies.

Local Level: Current Practices

How does this all tie in to our transportation practices at USM? The U.S. Department of Energy ranked Mississippi number five for using the most gasoline per capita in 2011. The United States average for gallons of gas consumed per capita was 423; in Mississippi that average sailed well above the national average at 524 gallons/capita. We also have some of the least urbanized land in all of the U.S. ranking 47 on the list, with less than 40% of our population living in urban areas ("Energy Consumption by Transportation Fuel in Mississippi"). The towns and cities of Mississippi tend to be spread out with many people living outside of city limits. This has contributed to the dearth of public transportation, as it is difficult for any route to span necessary lengths to encompass every need; however, alternative counter measures have not been enacted. Carpooling is not incentivized and as a result the practice is unpopular; similarly, the ratio of electric/hybrid vehicles to gasoline/diesel vehicles is exceptionally low, and few cities and towns have created safe infrastructure for alternatives to driving like bicycling or walking.

While the Gulf Park campus is relatively small in comparison with other university campuses, security sometimes inspects vehicles for parking violations and patrols the campus in one of their four full-size vehicles, which they currently fill with gasoline "about every two weeks" (Interview). The campus has reduced their carbon footprint in part with the purchase of three large electric utility vehicles, which they use for the majority of their "daily activity", thought they admit that this move was not intentionally green (Interview).

USMGC has one or two bike racks, no bike paths, no incentives for car-pooling, and no public or campus-run transit systems. The coast campus alone used 2270 gallons of fuel last year for security patrols and maintaining the grass (Energy Handout USM) that spans several acres of the campus (Campus Map). All of the grass and vegetation is maintained using high emission gas powered vehicles. The Gulf Park Campus of USM is about 65 acres in total ("University Communication"), and about a fourth of that is grass, other vegetation, or water. There are 7 parking lots over 7,000 square feet in size and half a dozen smaller lots at various locations. It is important to note, also, that Gulf Park has less than 3,500 feet of side-walk, including the recently installed TLC Fitness Trail, while there is in excess of 5,000 feet of road, none of it designated for bicycles.

Non-Motorized Alternatives

Many campuses across the United States have started to acknowledge the financial, health-related and environmental benefits of encouraging students to bike, and have set up infrastructure to support this realization. In 2002 Virginia Tech included a bicycle section in their "Transportation Master Plan". Cornell University included improved conditions for their "Campus Master Plan" in 2005, and The University of Maryland conducted a "Bicycle Study" to "enhance policies and programs for bicycle management, safety and security" in 2008 ("Clemson University Bikeways Master Plan").

The University of California, Berkeley, as part of a 2006

"Campus Bicycle Plan," conducted a study to uncover the modes of transportation preferred by their students in 2001, prior to improvements. The study revealed that 51% of the campus drove alone, 18% used public transit, 8% walked, 10% bicycled, 9% carpooled, 1% motorcycled and 3% fell in the "other" category. The plan endeavored to redesign "UCB's 178-acre central campus" and anticipated "an increase of approximately 500 faculty, staff and student bicycle commuters over the next 14 years" ("Bicycle Plan" UCB).

For well over a decade, schools have been trying to initiate bicycle programs, and there are countless models available for any campus wanting to follow suit. These extensive studies and the bicycle plans serve two important purposes for future non-motorized alternatives at USMGC: they act as good examples, and they suggest the necessary questions we need to ask before any feasible alternative can be carried out. Non-motorized alternatives like the ones proposed at Berkeley and Clemson require significant planning and effort. According to The University of Illinois, major concerns include, "safety, maintenance, connectivity, user-Friendliness, cost, funding, priority and study". They also discuss interesting possibilities like a "Campus Bike Center" with additional "Repair Stations," "Bicycle Sharing" programs, "Bicycle Courses" for students with bikes, or who are new to the campus, that would be geared toward practices and safety, and "Bicycle Parking and Storage Facilities" ("2014 Campus Bicycle Plan for the University of Illinois at Urbana-Champaign").

Other necessities for increased bicycle use on campus would be the installation of more bike racks, wider paths to accommodate for bicyclists and pedestrians, signage and incentives for students who bike, rather than drive to campus. Texas A&M University suggests the idea to "offer safety gear (e.g., vests, helmets) at discounted prices for students to prioritize safety for the riders" as one incentive, and adds that "locker rentals (for minimal fees) can also be employed to support the bike riding program" ("Transportation Master Plan:A Case Study"). Bike rentals, short and long-term would be another feasible installment here at USMGC.

The University of California Berkeley offers their students the "Alameda County Guaranteed Ride Home Program (GRH), plus free campus shuttle access, and subsidized transit passes." The GRH gives bikers free rides home in the event of an emergency and "the parking and transit incentives" give bikers alternatives for when they do not bike ("Bicycle Plan" UCB). "At the University of Maryland, committed cyclists receive 15 discounted daily parking permits," that can be used on days when the weather is exceptionally poor or the student is injured or other similar cases ("Clemson University Bikeways Master Plan").

Motorized Alternatives

Shuttles & Transit Systems

Although there is no public transportation available around USMGC, it would be possible to put in some form of transit system that could reduce the use of the personal vehicle. A shuttle system, for instance, would be a solution to the multitude of personal trips students and faculty are required to make between the campuses. In an article titled "University Transit," the American Public Transportation Association website reads, "Most large universities have either large sprawling campuses or two or more geographically separate campuses that require some form of transportation system. Such systems usually may only be used by students, faculty, employees, and visitors with passes, and are not available for use by others." The article also mentions that "those not listed generally use the local public transit system," ("University Transit"), which is not currently an option for USMGC because there is no public transit system available for the area.

If the campus were to enact a transit system, these shuttles could run depending on need, such as Arizona State University who posts their weekly schedules for each semester online for their students, and has a "Tracking Your Shuttle" option that allows students to see where the shuttles are and if they will be available when they need ("Parking & Transit" ASU). USMGC shuttles could travel back and forth as frequently as 2-4 times per day or only on the most heavily trafficked days, and a "Transit" button could even be added to the

"iSouthernMS" phone app for students and faculty with smart phones. The same shuttles could be used to travel common local and semi-local routes to offer an alternative mode of transportation for nearby students. If necessary, a fee could be assessed and charged students by semester or by year in lieu of a parking fee, or in addition to it. As another way to incentivize public transit use, parking fees could be increased. Auburn University states that "tuition payments include fees associated with Tiger Transit". This allows Auburn to provide the bus service without a usage fee ("Tiger Transit").

Carpooling

Carpooling is one of the ways that many states and campuses are becoming more sustainable. Mississippi, however, as a state, does little to support carpooling. No High Occupancy Vehicle (HOV) lanes seem to exist anywhere in the state. USMGC could offer students incentives for carpooling, though they would have to be significant enough to entice students. Texas A&M University expressed that "the current carpool program at UTEP does not appeal to that many students because of the lack of incentives" and that "the current locations of the carpool parking spaces have basically no advantage when compared to a regular perimeter or silver parking space" ("Transportation Master Plan: A Case Study"). For students interested in carpooling, and avoiding a parking fee altogether for their effort, there are services like CarpoolWorld, a site that connects drivers with passengers. Sites such as this could either be a more adequately publicized, or serve as a model for a USM version; perhaps a carpooling button could even be added to the "iSouthernMS" phone app for students and faculty with smart phones.

An Idle Free Campus

Idling, or leaving the engine running while the car is not moving, contributes in excess of one pound of carbon dioxide every 10 minutes according to The Environmental Defense Fund (EDF) website. The site also corrects some common misconceptions regarding idling. For instance, many believe that it uses more gas to turn off their car and

restart it, than to simply leave it running; however, the EDF explains that this is only true if the car is idling for less than 10 seconds. They also explain that "today's electronic engines do not need to warm up, even in winter" and that "the best way to warm the engine is by easing into your drive and avoiding excessive engine revving" ("Attention Drivers!").

Much of Canada has gone idle-free ("2 Existing Idling Control By-laws in Canada"), In the USA, Georgia's non-profit Clean Air Campaign launched a major initiative to create "No-Idle" school districts ("The Clean Air Campaign"). The Clean Air Campaign visits some "90 schools each year in Georgia and at least 30,000 students and 2,000 educators." They estimate that their outreach reduces "vehicle miles driven" by around "1.2 million" miles and emissions by "600 tons of air pollution per day in metro Atlanta" ("The Clean Air Campaign"). A no-idle policy at the Gulf Park campus is something that could be organized and enforced fairly quickly. It would be a visible step by the campus to show that we are a sustainability conscious institution. The Office of Environmental Policy at UCONN says it best when they say, "a no-idling policy is a part of good stewardship and better environmental practices goal as well as a reduction to campus greenhouse gas emissions" ("No Idling Policy").

Gas Powered Lawn Care?

While lawn care is not a transportation issue, per se, a significant portion of the 2270 gallons of gas purchased for Gulf Park is used to maintain the acres of grass throughout the USMGC campus. The South Lawn (the large grass lawn that runs along Highway 90) is over 820 feet long and 250 feet wide. Another area of grass, even larger, runs along the North West end of the campus. All of this land is basically unused and maintained using gas powered lawn equipment ("Campus Map"). Such equipment has a considerable carbon footprint.

In an article titled "Green Landscaping: Green Acres" on the Environmental Protection Agency (EPA) website, a number of

chilling numbers are shared, including such statistics as "a lawnmower pollutes as much in one hour as does driving an automobile for 350 miles" ("Green Landscaping: Greenacres"). In a slightly older article titled "Cleaner Air: Gas Mower Pollution Facts," the EPA states that, "one gas mower spews 88 lbs. of the greenhouse gas CO2, and 34 lbs. of other pollutants into the air every year" (People Powered Machines, 2008).

Alternatives exist to gasoline-powered lawn equipment, just as they do for personal vehicles. Many propane-powered lawn products are available, for instance (All Propane Mowers 2014). However, while lower-emission lawn equipment may appear to be a good place to start, a more effective approach is to reduce the amount of grass that needs maintained. For instance, many universities are creating community gardens that reduce grass acreage and have a lot of other positive benefits besides. Community gardens can offer "access to fresh and better tasting food, time to enjoy nature, health benefits, opportunities to socialize, a chance to beautify and give back to the community, and efforts to support the conservation of green space," among other things (Draper & Freedman, 480).

Who Will Lead The Way in Environmental Best Practices?

There is a considerable divide between our current practices and where we could be if we were dedicated to best practices in transportation on sustainability. The university campus possesses several advantages over larger communities when considering who should lead "green" initiatives nationally and globally. Universities are dedicated to education and academic advancement, and they are expected to educate the public and be the pioneers of progress and improvement. Additionally, students, staff and faculty can pursue issues of environmental sustainability in their respective areas of research and expertise much more readily than non-students whose time is more restricted by the terms of their employment.

Locally, USMGC could, and should work with local

municipalities, business and organizations to further sustainability efforts along the entire Gulf Coast. The city of Long Beach, where the USMGC campus is located, has dedicated very few resources to creating safe roads or paths for bicycles, or even pedestrians. Except for the US 90 boardwalk, on the south side of the campus, there is, I think, exactly one designated bike path in the city. Realistically, the community and USMGC will have to collaborate to convince the surrounding municipalities to take action, but ultimately, efforts to raise environmental awareness in the surrounding areas would be an excellent way to bridge the community with the students, faculty and staff of USMGC.

Works Cited

"2 Existing Idling Control By-laws in Canada." Natural Resources Canada.Canada.ca. 2012.Web. 4 Dec. 2014.

"2014 Campus Bicycle Plan: Campus Bicycle Network Master Plan for the University of Illinois at Urbana-Champaign." The University of Illinois at Urbana-Champaign. May 2014. Web. 1 Dec. 2014.

Aldrete-Sanchez, Rafael, Jeff Shelton & Dr. Ruey Long Cheu, P.E. "Integrating the Transportation System with a University Campus Transpiration Master Plan: A Case Study." Texas Transportation Institute. The Texas A&M University System. 2010. Web. 1 Dec. 2014.

Anonymous, USMGC Campus Police, Personal Interview. 1 Dec 2014.

"Attention Drivers! Turn off your Idling Engines: Reducing Vehicle Idling Will cut Pollution and Save you Money." Environmental Defense Fund. 2014. Web. 3 Dec. 2014.

Boras, Jay. "MIT Study: 200,000 Premature Deaths Caused by Emissions". *CleanTechnica*. 5 September, 2013. Web Accessed

3 April 2017.

CarpoolWorld. 2014. Web. 5 Dec. 2014.

"Cars, Trucks, and Air Pollution."Clean Vehcles: Air Pollution. Union of Concerned Scientists. 2014. Web. 5 Dec. 2014.

Chasing Ice. Dir. Jeff Orlowski. Perf. James Balog. Exposure, 2012 Film.

"Cleaner Air: Gas Mower Pollution Facts." People Powered Machines Push Reel Mowers. 2008. Web. 1 Dec. 2014.

"Clemson University Bikeways Master Plan". Clemson University. 2014. Web. 1 Dec 2014.

Cook, John. "Combating a Two-Decade Campaign Attacking the Scientific Consensus on Climate Change."Europhysics News. 44.6 (2014): 25-28.

Draper, Carrie & Darcy Freedman. "Review and Analysis of the Benefits, Purposes, and Motivations Associated with Community Gardening in the United States." Journal of Community Practice. 18.4 (2010): 458-492. Web. 6 Dec. 2014.

"Electric Vehicle FAQs." Programs and Services: Electric Vehicles Mississippi Power. 2014. Web. 6 Dec. 2014.

"Electronic Vehicles: Myths vs. Reality." Sierra.2012. Web. 1 Dec. 2014.

"Energy Consumption by Transportation Fuel in Mississippi."Clean Energy in My State. U.S. 2013. Department of Energy.Web. 1 Dec. 2014.

Godwill."The History and Origin of the Car."Knoji. 2014. Web.1 Dec. 2014.

Goldman, Josh. "Comparing Electric Vehicles: Hybrid vs. BEV vs. PHEV v. FCEV."Union of Concerned Scientists. 12 Feb. 2014. Web. 1 Dec. 2014.

Grabow, Maggie L. et al. "Air Quality and Exercise-Related Health Benefits from Reduced Car Travel in the Midwestern United States." *Environmental Health Perspectives*. 120.1 (2012): 68-76. Web. 1 Dec. 2014.

"Green Landscaping: Greenacres." Landscaping With Native Plants. United States Environmental Protection Agency. 2012. Web. 3 Dec. 2014.

"Gulf Park Campus Photos."University Communications. The University of Southern Mississippi. 2014. Web. 1 Dec. 2014.

"MyCar." Models. GreenTech Automotive. 2014. Web. 4 Dec. 2014.

"No Idling Policy." Office of Environmental Policy.University of Connecticut. 2014. Web. 6 Dec. 2014.

"Sources of Greenhouse Gas Emissions."Climate Change. United States Environmental Protection Agency. 2014. Web. 3 Dec. 2014.

Southern Miss Gulf Coast.Map. Oct. 2014.

Stroll, Kira, Kate Bolton and Crystal Barriscale. "Campus Bicycle Plan." University of California, Berkeley. 2006. Web. 1 Dec 2014.

"The Clean Air Campaign – Clean Air Schools No-Idle Program." The Clean Air Campaign. 2008. Web. 1 Dec. 2014.

"Welcome!" All Propane Mowers. 2014. Web. 5 Dec. 2014.

◆